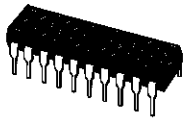
查询M54HC4351供应商

SGS-THOMSON MICROELECTRONICS

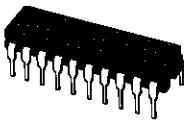
M54HC4351/52/53
M74HC4351/52/53

ANALOG MULTIPLEXER/DEMULTIPLEXER WITH ADDRESS LATCH: SINGLE 8 CHANNEL, DUAL 4 CHANNEL, TRIPLE 2 CHANNEL

- LOGIC LEVEL TRANSLATION TO ENABLE 5V LOGIC SIGNAL TO COMMUNICATE WITH ±5V ANALOG SIGNAL
- WIDE OPERATING VOLTAGE RANGE (V_{CC} - V_{EE}) 2V TO 12V
- LOW "ON" RESISTANCE: 70Ω TYP. (V_{CC} - V_{EE} = 4.5 V) 50Ω TYP. (V_{CC} - V_{EE} = 9 V)
- WIDE ANALOG INPUT VOLTAGE RANGE: ±6V
- FAST SWITCHING
- LOW CROSSTALK BETWEEN SWITCHES
- HIGH ON/OFF OUTPUT VOLTAGE RATIO
- LOW SINE WAVE DISTORTION: 0.02% (TYP.) AT V_{CC} - V_{EE} = 9 V
- HIGH NOISE IMMUNITY V_{NIH} = V_{NIL} = 28% V_{CC} (MIN.)
- LOW POWER DISSIPATION I_{CC} = 4 µA (MAX) AT T_A = 25 °C



B1R
(Plastic Package)



F1R
(Ceramic Package)

M1R
(Micro Package)

C1R
(Chip Carrier)

ORDER CODES :

M54HCXXXXF1R M74HCXXXXM1R
M74HCXXXXB1R M74HCXXXXC1R

DESCRIPTION

These devices are analog multiplexer demultiplexers in high speed silicon gate C^2MOS technology. These analog switches are bidirectional and digitally controlled. A built-in level shifting is included to allow them a control input range of up to ± 6V (peak) for an analog signal with digital control signal of 0 to 6V.

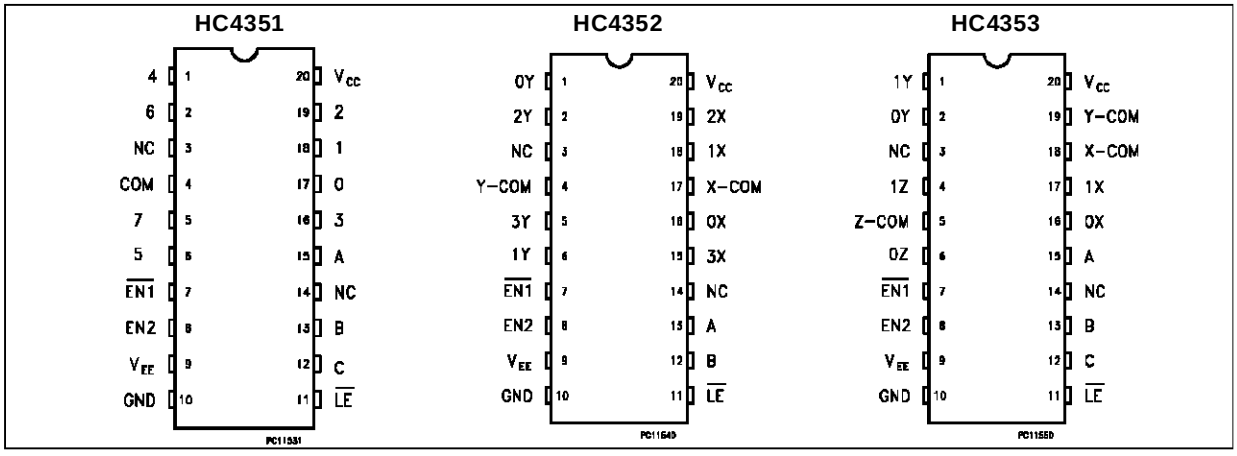
V_{EE} supply pin is provided for analog input signals. They have two enable inputs to enable all the switches when high (EN2) or low ($\overline{EN1}$). For operation as a digital multiplexer/demultiplexer, V_{EE} is connected to GND.

The HC4351 is a single 8 channel multiplexer demultiplexer having three binary control inputs A, B and C to select 1 of 8 to be turned on, and connected to the output.

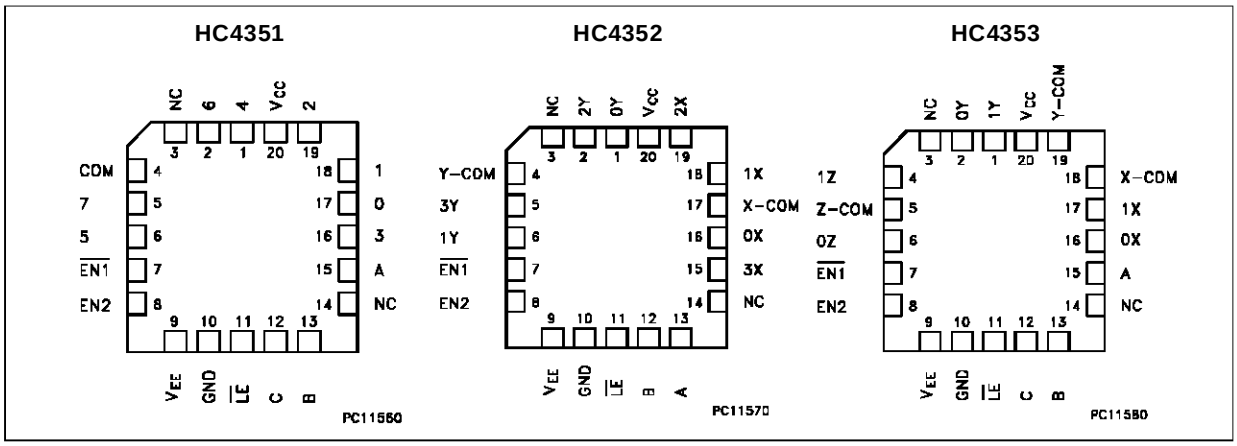
The HC4352 has a pair of four channel multiplexer demultiplexer having two control inputs A and B that select one of four channel of the two sections.

The HC4353 is a triple two channel multiplexer demultiplexer having three separate digital control inputs A, B and C to select independently one of a pair of channles.

PIN CONNECTION (top view)



CHIP CARRIER



PIN DESCRIPTION (HC4351)

PIN No	SYMBOL	NAME AND FUNCTION
4	COM	Common
3, 14	NC	Not Connected
7	$\overline{EN1}$	Enable Input (Active LOW)
8	EN2	Enable Input (Active HIGH)
9	V_{EE}	Negative Supply Voltage
11	$\overline{LE}$	Latch Enable Input (Active LOW)
15, 13, 12	A, B, C	Select Inputs
17, 18, 19, 16, 1, 6, 2, 5	0 to 7	Independent Input/Outputs
10	GND	Ground (0V)
20	V_{CC}	Positive Supply Voltage

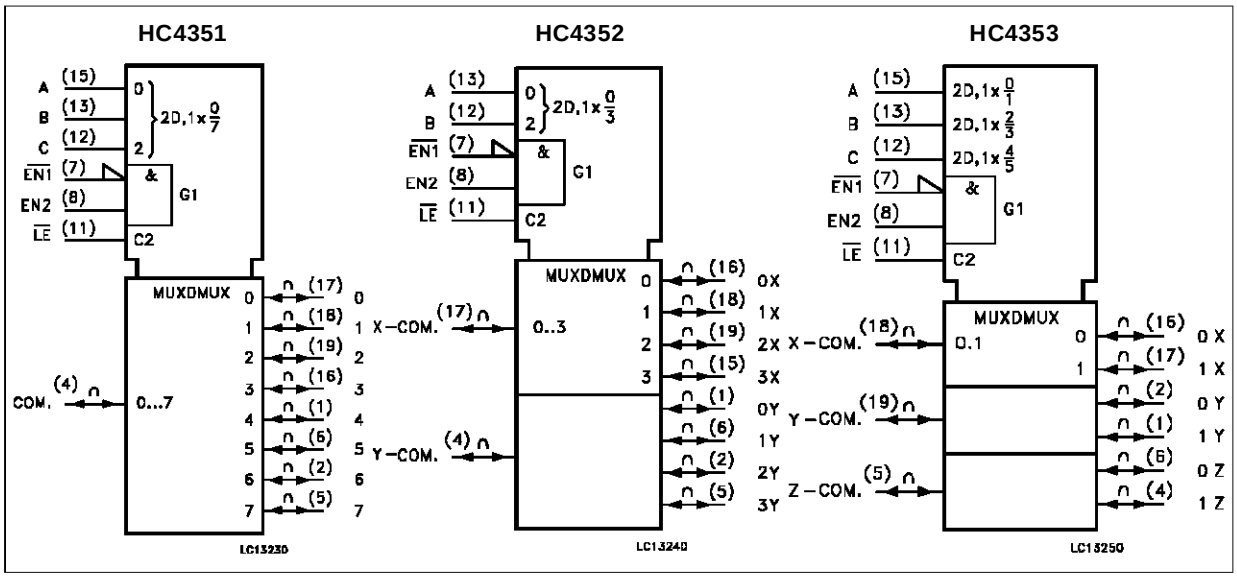
PIN DESCRIPTION (HC4352)

PIN No	SYMBOL	NAME AND FUNCTION
1, 6, 2, 5	0Y to 3Y	Independent Input/Outputs
3, 14	NC	Not Connected
7	$\overline{EN1}$	Enable Input (Active LOW)
8	EN2	Enable Input (Active HIGH)
9	V_{EE}	Negative Supply Voltage
11	$\overline{LE}$	Latch Enable Input (Active LOW)
13, 12	A, B	Select Inputs
16, 18, 19, 15	0X to 3X	Independent Input/Outputs
17, 4	X COM Y COM	Common Output/Inputs
10	GND	Ground (0V)
20	V_{CC}	Positive Supply Voltage

PIN DESCRIPTION (HC4353)

PIN No	SYMBOL	NAME AND FUNCTION
1, 2	0Y 1Y	Independent Input/Outputs
5	Z COM	Common Output/Inputs
6, 4	0Z, 1Z	Independent Input/Outputs
3, 14	NC	Not Connected
7	$\overline{EN1}$	Enable Input (Active LOW)
8	EN2	Enable Input (Active HIGH)
9	V_{EE}	Negative Supply Voltage
11	$\overline{LE}$	Latch Enable Input (Active LOW)
15, 13, 12	A, B, C	Select Inputs
16, 17	0X, 1X	Independent Input/Outputs
18	X COM	Common Output/Inputs
19	Y COM	Common Output/Inputs
10	GND	Ground (0V)
20	V_{CC}	Positive Supply Voltage

IEC LOGIC SYMBOLS



TRUTH TABLE

CONTROL INPUTS					"ON" CHANNEL ($\overline{LE}$ = H) **		
$\overline{EN1}$	EN2	C *	B	A	HC4351	HC4352	HC4353
L	H	L	L	L	0	0X, 0Y	0X, 0Y, 0Z
L	H	L	L	H	1	1X, 1Y	1X, 0Y, 0Z
L	H	L	H	L	2	2X, 2Y	0X, 1Y, 0Z
L	H	L	H	H	3	3X, 3Y	1X, 1Y, 0Z
L	H	H	L	L	4	- -	0X, 0Y, 1Z
L	H	H	L	H	5	- -	1X, 0Y, 1Z
L	H	H	H	L	6	- -	0X, 1Y, 1Z
L	H	H	H	H	7	- -	1X, 1Y, 1Z
H	X	X	X	X	NONE	NONE	NONE
X	L	X	X	X	NONE	NONE	NONE

X: DON'T CARE *: HC4351/3 only
** When latch Enable is low, the Channel Selection is latched and the Channel Address Latch does not change state.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage Range	-0.5 to +7	V
V_{CC} - V_{EE}	Supply Voltage Range	-0.5 to 13	V
V_{IN}	DC Input Voltage	-0.5 to V_{CC} + 0.5	V
$V_{I/O}$	DC Switch I/O Voltage	V_{EE} - 0.5 to V_{CC} + 0.5	V
I_{IK}	Input Diode Current	± 20	mA
I_{OK}	I/O Diode Current	± 20	mA
I_{OUT}	DC Output Current	± 25	mA
I_{CC} or I_{GND}	DC V_{CC} or Ground Current	± 50	mA
P_D	Power Dissipation	500 (*)	mW
T_{stg}	Storage Temperature	-65 to +150	°C
T_L	Lead Temperature (10 sec)	300	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.
(*) 500 mW: ≅ 65 °C derate to 300 mW by 10mW/°C: 65 °C to 85 °C

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter		Value	Unit
V_{CC}	Supply Voltage		2 to 6	V
V_{EE}	Supply Voltage		-6 to 0	V
V_{CC} - V_{EE}	Supply Voltage		2 to 12	V
V_{IN}	Input Voltage		0 to V_{CC}	V
$V_{I/O}$	DC Switch I/O Voltage		V_{EE} to V_{CC}	V
T_{op}	Operating Temperature: **M54HC** Series **M74HC** Series		-55 to +125 -40 to +85	°C °C
t_r, t_f	Input Rise and Fall Time	V_{CC} = 2 V	0 to 1000	ns
		V_{CC} = 4.5 V	0 to 500	
		V_{CC} = 6 V	0 to 400	

DC SPECIFICATIONS

Symbol	Parameter	Test Conditions			Value							Unit
		V_{CC} (V)	V_{EE} (V)		T_A = 25 °C 54HC and 74HC			-40 to 85 °C 74HC		-55 to 125 °C 54HC		
					Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
V_{IHC}	High Level Control Input Voltage	2.0			1.5			1.5		1.5		V
		4.5			3.15			3.15		3.15		
		6.0			4.2			4.2		4.2		
V_{ILC}	Low Level Control Input Voltage	2.0					0.5		0.5		0.5	V
		4.5					1.35		1.35		1.35	
		6.0					1.8		1.8		1.8	
R_{ON}	ON Resistance	4.5	GND	V_{IN} = V_{IHC} or V_{ILC} $V_{I/O}$ = V_{CC} to V_{EE} $I_{I/O} \leq$ 2 mA		85	180		225			Ω
		4.5	-4.5			55	120		150			
		6.0	-6.0			50	100		125			
		2.0	GND	V_{IN} = V_{IHC} or V_{ILC} $V_{I/O}$ = V_{CC} or V_{EE} $I_{I/O} \leq$ 2 mA		150						
		4.5	GND			70	150		190			
		4.5	-4.5			50	100		125			
		6.0	-6.0			45	80		100			
ΔR_{ON}	Difference of ON Resistance Between Switches	4.5	GND	V_{IN} = V_{IHC} or V_{ILC} $V_{I/O}$ = V_{CC} to V_{EE} $I_{I/O} \leq$ 2 mA		10	30		35			Ω
		4.5	-4.5			5	12		15			
		6.0	-6.0			5	10		12			
I_{OFF}	Input/Output Leakage Current (SWITCH OFF)	6.0	-6.0	V_{OS} = V_{CC} or GND V_{IS} = GND or V_{CC} V_{IN} = V_{ILC}			±100		±1000		±	nA
I_{IZ}	Switch Input Leakage Current (SWITCH ON)	6.0	-6.0	V_{OS} = V_{CC} or GND V_{INH} = V_{IHC}			±100		±1000		±	nA
I_{IN}	Control Input Current	6.0	GND	V_{IN} = V_{CC} or GND			±0.1		±1		±1	µA
I_{CC}	Quiescent Supply Current	6.0	GND	V_{IN} = V_{CC} or GND			4		40		80	µA
		6.0	-6.0				8		80		160	

AC ELECTRICAL CHARACTERISTICS for HC4351 (C_L = 50 pF, Input $t_r = t_f$ = 6 ns, GND=0V)

Symbol	Parameter	Test Conditions			Value							Unit
		V_{CC} (V)	V_{EE} (V)		T_A = 25 °C 54HC and 74HC			-40 to 85 °C 74HC		-55 to 125 °C 54HC		
					Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
$\Phi_{I/O}$	Phase Difference Between Input and Output	2.0	GND			25	60		75			ns
		4.5	GND			6	12		15			
		6.0	GND			5	10		13			
		4.5	-4.5			4						
t_{PZL} t_{PZH}	Output Enable Time ($\overline{E1}$, E2 - O)	2.0	GND	R_L = 1KΩ		80	200		250		300	ns
		4.5	GND			20	40		50		60	
		6.0	GND			16	34		43		51	
		4.5	-4.5			18						
t_{PZL} t_{PZH}	Output Enable Time ($\overline{LE}$ - I/O)	2.0	GND	R_L = 1KΩ		80	225		280		340	ns
		4.5	GND			22	45		56		68	
		6.0	GND			17	38		48		57	
		4.5	-4.5			18						
t_{PZL} t_{PZH}	Output Enable Time (A, B, C - I/O)	2.0	GND	R_L = 1KΩ		75	225		280		340	ns
		4.5	GND			22	45		56		68	
		6.0	GND			16	38		48		57	
		4.5	-4.5			17						
t_{PLZ} t_{PHZ}	Output Disable Time ($\overline{E1}$, E2 - O)	2.0	GND	R_L = 1KΩ		120	275		344		415	ns
		4.5	GND			38	55		69		83	
		6.0	GND			33	47		59		71	
		4.5	-4.5			30						
t_{PLZ} t_{PHZ}	Output Disable Time ($\overline{LE}$ - I/O)	2.0	GND	R_L = 1KΩ		120	275		344		415	ns
		4.5	GND			40	55		69		83	
		6.0	GND			35	47		59		71	
		4.5	-4.5			34						
t_{PLZ} t_{PHZ}	Output Disable Time (A, B, C - I/O)	2.0	GND	R_L = 1KΩ		120	290		363		433	ns
		4.5	GND			40	58		73		87	
		6.0	GND			35	49		61		74	
		4.5	-4.5			35						
$t_{W(H)}$	Minimum Pulse Width (LE)	2.0					75		95		110	ns
		4.5					15		19		22	
		6.0					13		16		19	
t_s	Minimum Set Up Time	2.0					50		60		75	ns
		4.5					10		12		15	
		6.0					9		11		13	
t_h	Minimum Hold Time	2.0					5		5		5	ns
		4.5					5		5		5	
		6.0					5		5		5	
C_{IN}	Input Capacitance					5	10		10		10	pF
C_{IS}	Common Terminal Capacitance	5.0	-5.0			36	70		70		70	pF
C_{OS}	Switch Terminal Capacitance	5.0	-5.0			7	15		15		15	pF
C_{IOS}	Feed Through Capacitance	5.0	-5.0			0.95	2		2		2	pF
C_{PD} (*)	Power Dissipation Capacitance	5.0	GND			23						pF

(*) C_{PD} is defined as the value of the IC's internal equivalent capacitance which is calculated from the operating current consumption without load. (Refer to Test Circuit). Average operting current can be obtained by the following equation. $I_{CC}(opr) = C_{PD} \bullet V_{CC} \bullet f_{IN} + I_{CC}$

AC ELECTRICAL CHARACTERISTICS for HC4352 (C_L = 50 pF, Input $t_r = t_f$ = 6 ns, GND=0V)

Symbol	Parameter	Test Conditions			Value							Unit
		V_{CC} (V)	V_{EE} (V)		T_A = 25 °C 54HC and 74HC			-40 to 85 °C 74HC		-55 to 125 °C 54HC		
					Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
$\Phi_{I/O}$	Phase Difference Between Input and Output	2.0	GND			25	60		75			ns
		4.5	GND			6	12		15			
		6.0	GND			5	10		13			
		4.5	-4.5			4						
t_{PZL} t_{PZH}	Output Enable Time ($\overline{E1}$, E2 - O)	2.0	GND	R_L = 1KΩ		80	200		250		300	ns
		4.5	GND			20	40		50		60	
		6.0	GND			16	34		43		51	
		4.5	-4.5			18						
t_{PZL} t_{PZH}	Output Enable Time ($\overline{LE}$ - I/O)	2.0	GND	R_L = 1KΩ		80	225		280		340	ns
		4.5	GND			22	45		56		68	
		6.0	GND			17	38		48		57	
		4.5	-4.5			18						
t_{PZL} t_{PZH}	Output Enable Time (A, B, C - I/O)	2.0	GND	R_L = 1KΩ		80	225		280		340	ns
		4.5	GND			22	45		56		68	
		6.0	GND			16	38		48		57	
		4.5	-4.5			17						
t_{PLZ} t_{PHZ}	Output Disable Time ($\overline{E1}$, E2 - O)	2.0	GND	R_L = 1KΩ		120	275		344		415	ns
		4.5	GND			38	55		69		83	
		6.0	GND			33	47		59		71	
		4.5	-4.5			36						
t_{PLZ} t_{PHZ}	Output Disable Time ($\overline{LE}$ - I/O)	2.0	GND	R_L = 1KΩ		160	275		344		415	ns
		4.5	GND			40	55		69		83	
		6.0	GND			34	47		59		71	
		4.5	-4.5			32						
t_{PLZ} t_{PHZ}	Output Disable Time (A, B, C - I/O)	2.0	GND	R_L = 1KΩ		120	275		344		415	ns
		4.5	GND			40	55		69		83	
		6.0	GND			35	47		59		71	
		4.5	-4.5			31						
$t_{W(H)}$	Minimum Pulse Width (LE)	2.0					75		95		110	ns
		4.5					15		19		22	
		6.0					13		16		19	
t_s	Minimum Set Up Time	2.0					50		60		75	ns
		4.5					10		12		15	
		6.0					9		11		13	
t_h	Minimum Hold Time	2.0					5		5		5	ns
		4.5					5		5		5	
		6.0					5		5		5	
C_{IN}	Input Capacitance					5	10		10		10	pF
C_{IS}	Common Terminal Capacitance	5.0	-5.0			19	40		40		40	pF
C_{OS}	Switch Terminal Capacitance	5.0	-5.0			7	15		15		15	pF
C_{IOS}	Feed Through Capacitance	5.0	-5.0			0.85	2		2		2	pF
C_{PD} (*)	Power Dissipation Capacitance	5.0	GND			34						pF

(*) C_{PD} is defined as the value of the IC's internal equivalent capacitance which is calculated from the operating current consumption without load. (Refer to Test Circuit). Average operting current can be obtained by the following equation. $I_{CC}(opr) = C_{PD} \bullet V_{CC} \bullet f_{IN} + I_{CC}$

AC ELECTRICAL CHARACTERISTICS for HC4353 (C_L = 50 pF, Input $t_r = t_f$ = 6 ns, GND=0V)

Symbol	Parameter	Test Conditions			Value							Unit
		V_{CC} (V)	V_{EE} (V)		T_A = 25 °C 54HC and 74HC			-40 to 85 °C 74HC		-55 to 125 °C 54HC		
					Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
$\Phi_{I/O}$	Phase Difference Between Input and Output	2.0	GND			25	60		75			ns
		4.5	GND			6	12		15			
		6.0	GND			5	10		13			
		4.5	-4.5			4						
t_{PZL} t_{PZH}	Output Enable Time ($\overline{E1}$, E2 - O)	2.0	GND	R_L = 1KΩ		100	200		250		300	ns
		4.5	GND			22	40		50		60	
		6.0	GND			18	34		43		51	
		4.5	-4.5			19						
t_{PZL} t_{PZH}	Output Enable Time ($\overline{LE}$ - I/O)	2.0	GND	R_L = 1KΩ		110	225		280		340	ns
		4.5	GND			24	45		56		68	
		6.0	GND			20	38		48		57	
		4.5	-4.5			18						
t_{PZL} t_{PZH}	Output Enable Time (A, B, C - I/O)	2.0	GND	R_L = 1KΩ		100	225		280		340	ns
		4.5	GND			22	45		56		68	
		6.0	GND			18	38		48		57	
		4.5	-4.5			19						
t_{PLZ} t_{PHZ}	Output Disable Time ($\overline{E1}$, E2 - O)	2.0	GND	R_L = 1KΩ		130	290		363		435	ns
		4.5	GND			38	58		72		87	
		6.0	GND			32	49		61		74	
		4.5	-4.5			30						
t_{PLZ} t_{PHZ}	Output Disable Time ($\overline{LE}$ - I/O)	2.0	GND	R_L = 1KΩ		140	300		375		450	ns
		4.5	GND			41	60		75		90	
		6.0	GND			34	51		64		77	
		4.5	-4.5			37						
t_{PLZ} t_{PHZ}	Output Disable Time (A, B, C - I/O)	2.0	GND	R_L = 1KΩ		135	325		406			ns
		4.5	GND			42	65		81		100	
		6.0	GND			32	55		69		85	
		4.5	-4.5			35						
$t_{W(H)}$	Minimum Pulse Width (LE)	2.0					75		95		110	ns
		4.5					15		19		22	
		6.0					13		16		19	
t_s	Minimum Set Up Time	2.0					50		60		75	ns
		4.5					10		12		15	
		6.0					9		11		13	
t_h	Minimum Hold Time	2.0					5		5		5	ns
		4.5					5		5		5	
		6.0					5		5		5	
C_{IN}	Input Capacitance					5	10		10		10	pF
C_{IS}	Common Terminal Capacitance	5.0	-5.0			11	20		20		20	pF
C_{OS}	Switch Terminal Capacitance	5.0	-5.0			7	15		15		15	pF
C_{IOS}	Feed Through Capacitance	5.0	-5.0			0.75	2		2		2	pF
C_{PD} (*)	Power Dissipation Capacitance	5.0	GND			10						pF

(*) C_{PD} is defined as the value of the IC's internal equivalent capacitance which is calculated from the operating current consumption without load. (Refer to Test Circuit). Average operting current can be obtained by the following equation. $I_{CC}(opr) = C_{PD} \bullet V_{CC} \bullet f_{IN} + I_{CC}$

ANALOG SWITCH CHARACTERISTICS (GND = 0 V T_A = 25 °C)

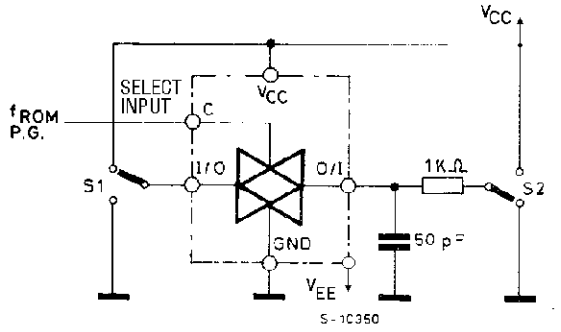
Symbol	Parameter	Test Conditions				Value	Unit
		V_{CC} (V)	V_{EE} (V)	VIN (Vp-p)		Typ.	
	Sine Wave Distortion	2.25	-2.25	4	f_{IN} = 1 KHz R_L = 10 Ω C_L = 50 pF	0.025	%
		4.5	-4.5	8		0.02	
f_{MAX}	Frequency Response (Switch ON)	4.5	-4.5	Adjust f_{IN} voltage to Obtain 0 dBm at V_{OS}. Increase f_{IN} Frequency until dB Meter Reads -3dB R_L = 50 Ω C_L = 10 pF (*)		200	MHz
	Feedthrough Attenuation (Switch OFF)	2.25	-2.25	V_{IN} is centered at (V_{CC} - V_{EE})/2. Adjust input for 0 dBm R_L = 600 Ω C_L = 50 pF f_{IN} = 1 MHz sine wave		-50	dB
		4.5	-4.5			-50	
		6	-6			-50	
	Crosstalk Control to switch	2.25	-2.25	t_r = t_f = 6ns R_L = 600 Ω C_L = 50 pF f_{IN} = 1 MHz square wave		110	mV
		4.5	-4.5			225	
		6.0	-6.0			310	
	Crosstalk Between any two switches	2.25	-2.25	Adjust V_{IN} to obtain 0dBm at input R_L = 600 Ω C_L = 50 pF f_{IN} = 1 MHz sine wave		-50	dB
		4.5	-4.5			-50	
		6	-6			-50	

(*): Input COMMON Terminal, and measured at SWITCH Terminal.

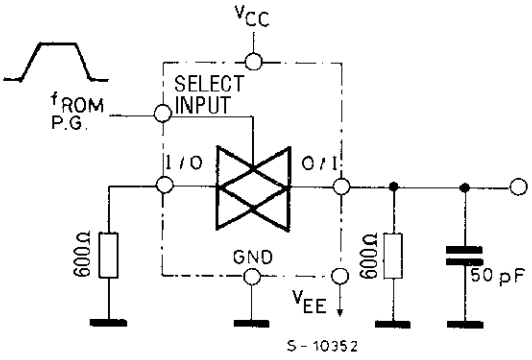
NOTE: These characteristics are determined by design of devices.

SWITCHING CHARACTERISTICS TEST CIRCUIT

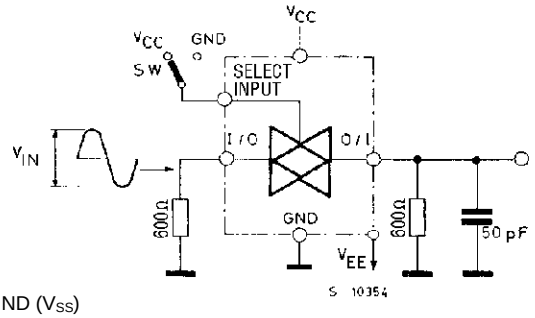
t_{PLZ}, t_{PHZ}, t_{PZL}, t_{PZH}.



CROSSTALK (control to output)

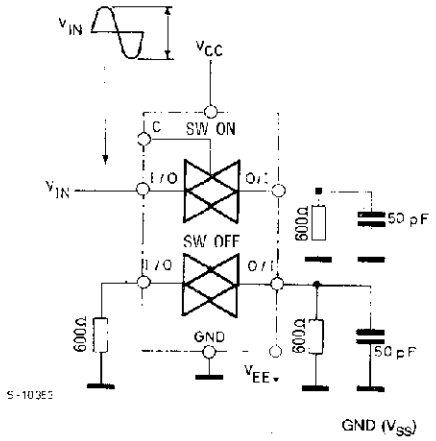


BANDWIDTH AND FEEDTHROUGH ATTENUATION



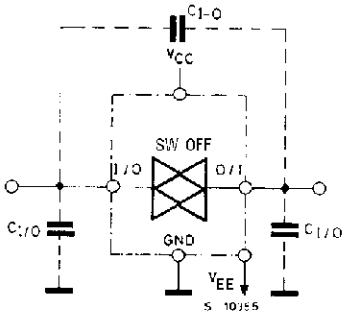
GND (V_{SS})

CROSSTALK BETWEEN ANY TWO SWITCHES



GND (V_{SS})

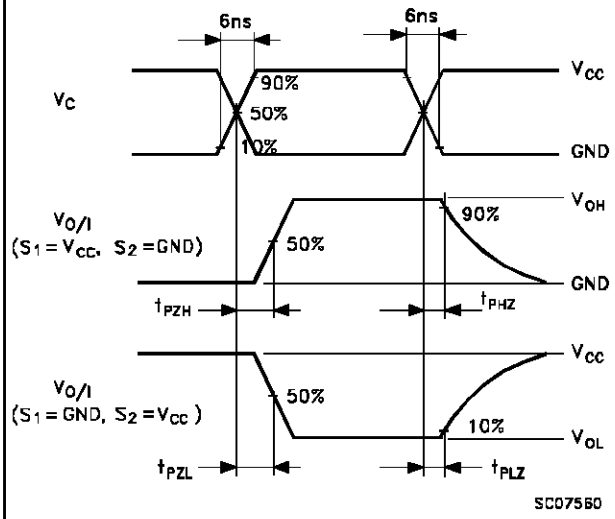
C_{I-O} $C_{I/O}$



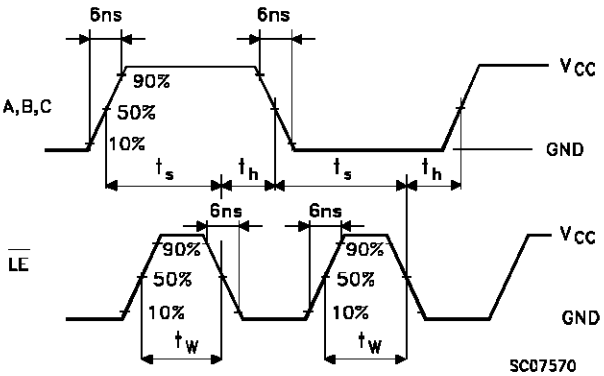
GND (V_{SS})

SWITCHING CHARACTERISTICS TEST WAVEFORM

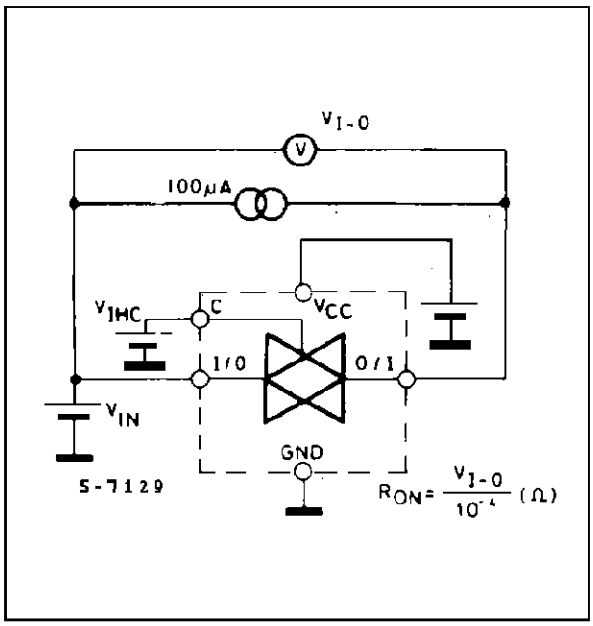
t_{PLZ}, t_{PHZ}, t_{PZL}, t_{PZH}.



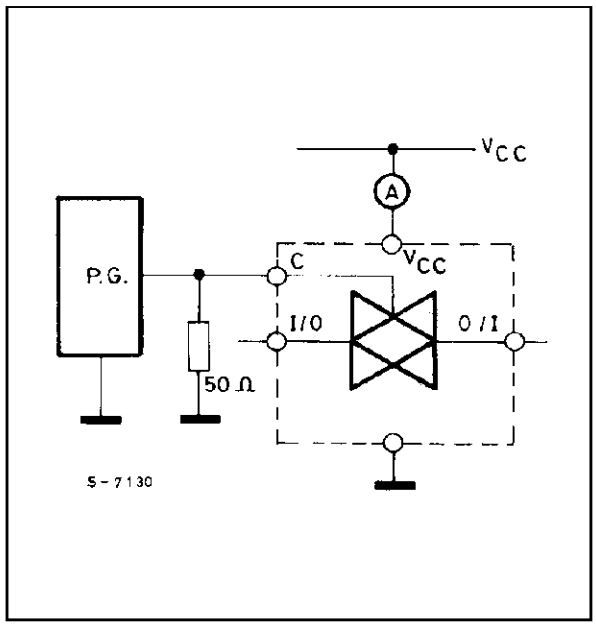
t_S, t_h, t_W



CHANNEL RESISTANCE (R_{ON})

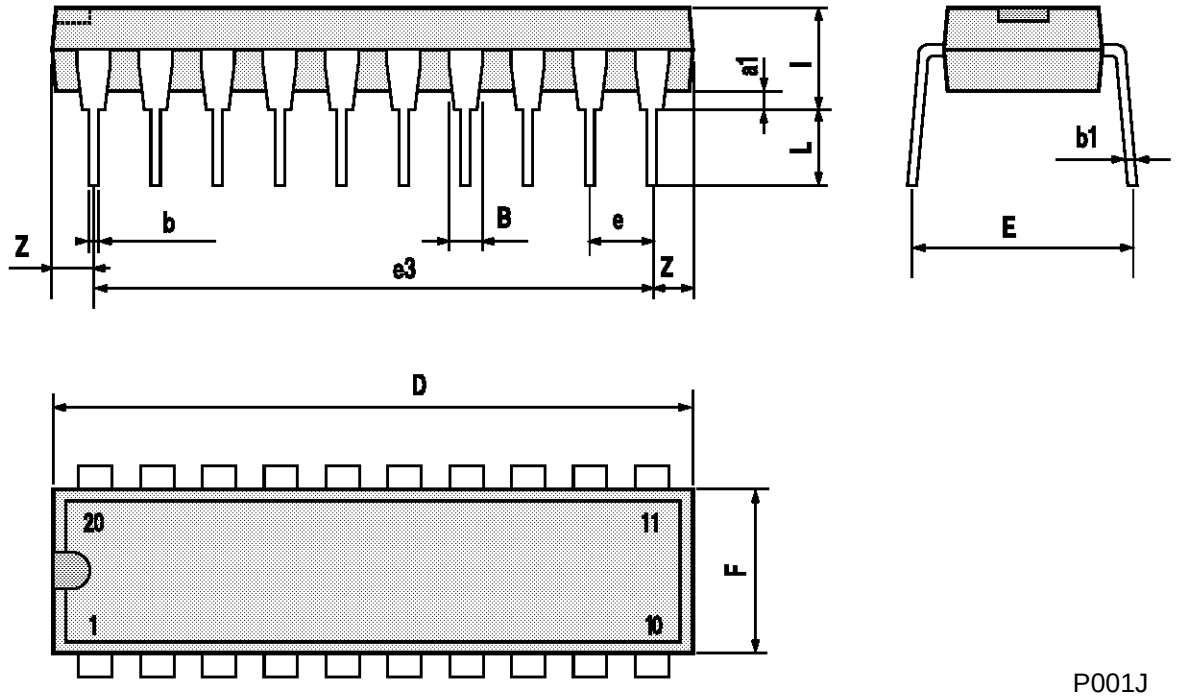


I_{CC} (Opr.)



Plastic DIP20 (0.25) MECHANICAL DATA

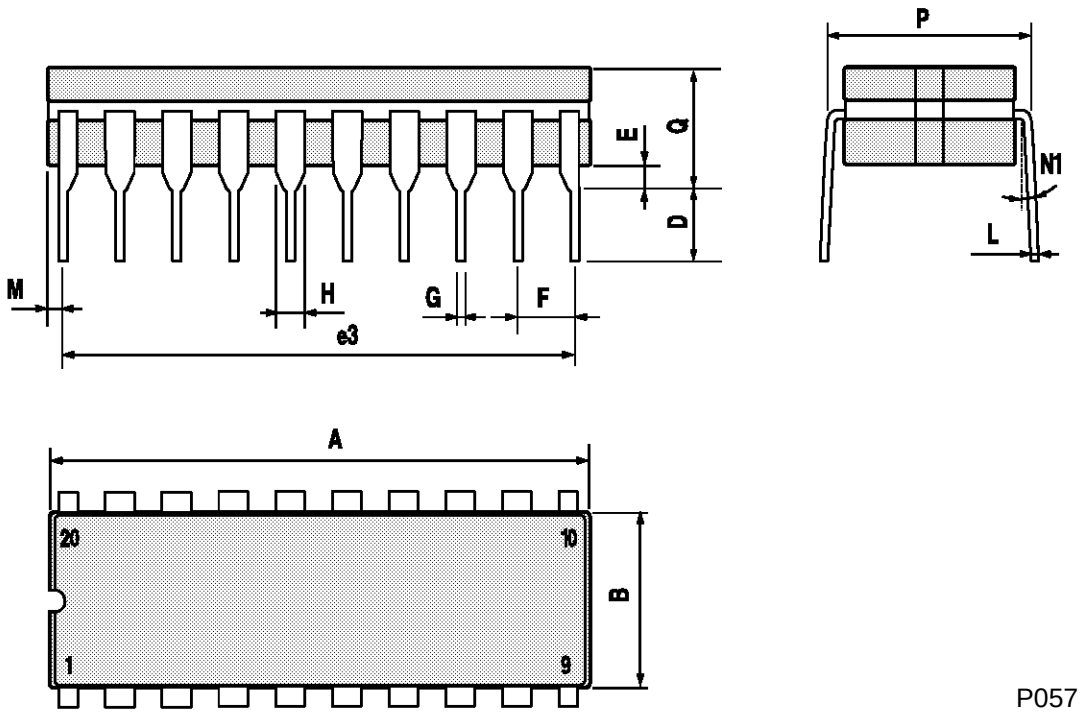
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.254			0.010		
B	1.39		1.65	0.055		0.065
b		0.45			0.018	
b1		0.25			0.010	
D			25.4			1.000
E		8.5			0.335	
e		2.54			0.100	
e3		22.86			0.900	
F			7.1			0.280
I			3.93			0.155
L		3.3			0.130	
Z			1.34			0.053



P001J

Ceramic DIP20 MECHANICAL DATA

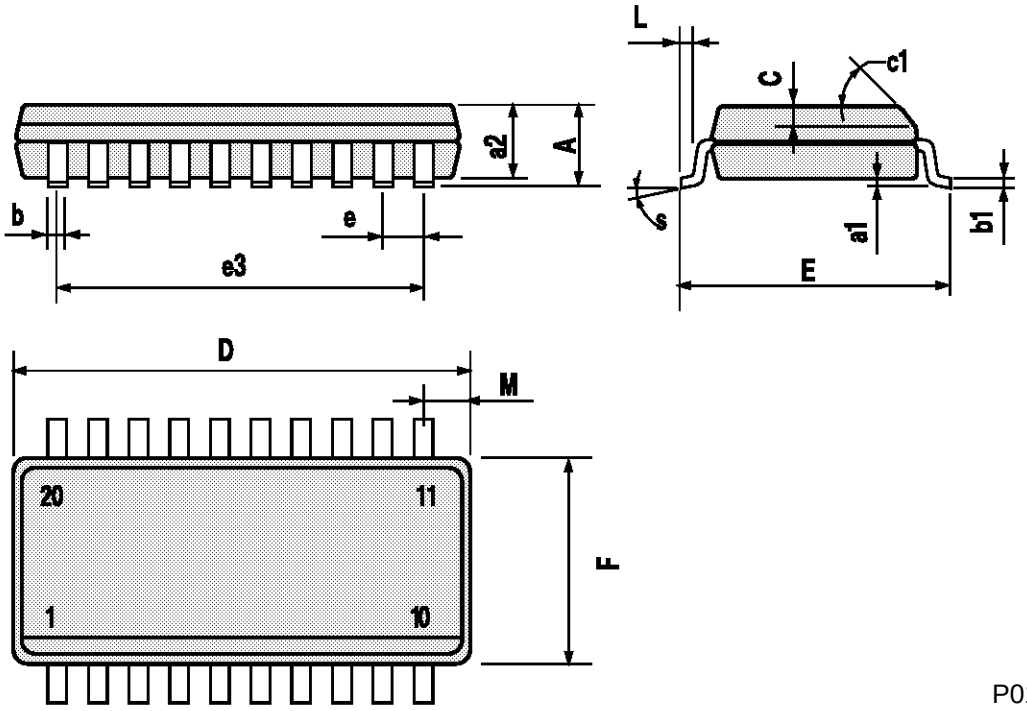
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			25			0.984
B			7.8			0.307
D		3.3			0.130	
E	0.5		1.78	0.020		0.070
e3		22.86			0.900	
F	2.29		2.79	0.090		0.110
G	0.4		0.55	0.016		0.022
I	1.27		1.52	0.050		0.060
L	0.22		0.31	0.009		0.012
M	0.51		1.27	0.020		0.050
N1	4° (min.), 15° (max.)					
P	7.9		8.13	0.311		0.320
Q			5.71			0.225



P057H

SO20 MECHANICAL DATA

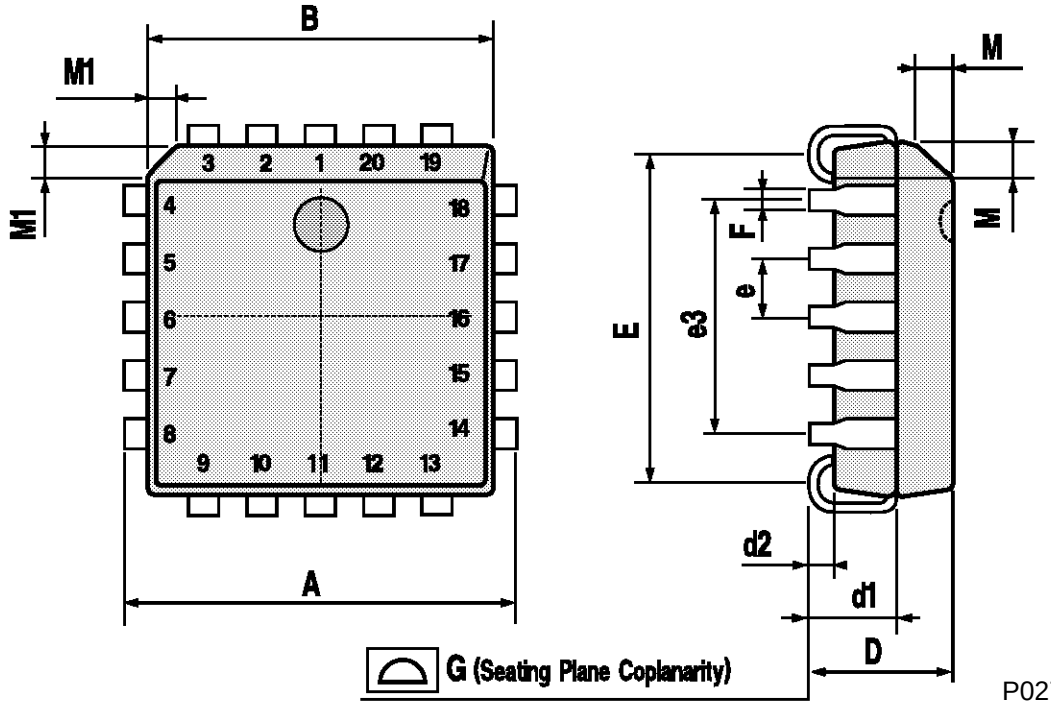
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			2.65			0.104
a1	0.10		0.20	0.004		0.007
a2			2.45			0.096
b	0.35		0.49	0.013		0.019
b1	0.23		0.32	0.009		0.012
C		0.50			0.020	
c1	45° (typ.)					
D	12.60		13.00	0.496		0.512
E	10.00		10.65	0.393		0.419
e		1.27			0.050	
e3		11.43			0.450	
F	7.40		7.60	0.291		0.299
L	0.50		1.27	0.19		0.050
M			0.75			0.029
S	8° (max.)					



P013L

PLCC20 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	9.78		10.03	0.385		0.395
B	8.89		9.04	0.350		0.356
D	4.2		4.57	0.165		0.180
d1		2.54			0.100	
d2		0.56			0.022	
E	7.37		8.38	0.290		0.330
e		1.27			0.050	
e3		5.08			0.200	
F		0.38			0.015	
G			0.101			0.004
M		1.27			0.050	
M1		1.14			0.045	



P027A

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